Wireless 11b Access Point AP11B

User's Guide

Version 1.0
June 2003

FCC Radio Frequency Interference Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this equipment must be installed to provide a separation distance of at least eight inches (20cm) from all persons. This equipment must not be operated in conjunction with any other antenna.

CE Warning

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

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Revision History

Revision	Revision History	Date
V1.0	First Release	June 2003

Important Safety Precautions

Always read and follow these basic safety precautions carefully when handling any piece of electronic component.

1. Keep this User's Manual for future reference.
2. Keep this equipment away from humidity.
3. Lay this equipment on a reliable flat surface before setting it up.
4. The openings on the enclosure are for air convection hence protects the equipment from overheating.
5. All cautions and warnings on the equipment should be noted.
6. Never pour any liquid into the opening that could damage or cause electrical shock.
7. If any of the following situations arises, get the equipment checked by a service personnel:
   - Liquid has penetrated into the equipment
   - The equipment has been exposed to moisture
   - The equipment has not work well or you can not get it work according to User's Manual
   - The equipment has dropped and damaged
   - If the equipment has obvious sign of breakage
8. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 70^0C OR BELOW -30^0C, IT MAY DAMAGE THE EQUIPMENT.

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1. Introduction

1.1 What is AP11B

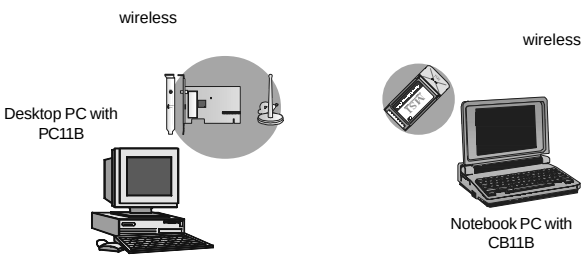
MSI AP11B wireless access point is IEEE802.11b compliant, and connects one or more wireless enabled computers to an Ethernet network or Cable/xDSL modem for high speed connection, anywhere in your home or office.

The AP11B wireless access point's high-gain antennas offer a range of operation of up to 500 feet indoor, providing seamless roaming throughout your LAN infrastructure. Advanced user authentication ensures a high level of security for wireless networking, while easy-to-use web-based configuration tools ensure that you'll always be in control. Best of all, the AP11B wireless access point features easy installation---your choice to be free-standing, wall- or ceiling-mounted.

With all these features come together in one compact, lightweight, and power-efficient unit, you have the ultimate in flexible networking---the AP11B wireless access point.

1.2 How AP11B Works

Infrastructure Networking Mode--- Infrastructure networking differs from Ad-hoc networking is that it includes an Access Point. The Access Point enables users on a wireless LAN to access an existing wired network, allowing wireless users to take advantage of the wired networks resources, such as Internet, email, file transfer, and printer sharing. The scale and range of the Infrastructure networking are larger and wider than that of the Ad-hoc networking.



1.3 Features & Benefits

- **11Mbps Data Rate/150-500ft Indoor Range**
  The AP11B runs with data-intensive applications like multimedia and streaming video/audio --- even through walls, floors and ceilings. You get high speed networking without wires --- ideal for home office networking requirements.

- **Superior Antennas Design**
  One external dipole and one internal patch antennas provide superior polarized reception and transmission for the best signal quality.

- **Wi-Fi Certified**
  The AP11B complies with IEEE802.11b standard and Wi-Fi, allowing full interoperability with any Wi-Fi certified wireless product.

- **Easy Installation**
  User-friendly web-based interface and step-by-step Setup Wizard make the AP11B fast and easy to install.

- **WEP Security to Ensure Privacy**
  Supports 64/128-bit WEP encryption, which ensures that your network signal is secure and private.

1.4 Package Contents

Unpack the package and check all the items carefully. If any item contained is damaged or missing, please contact your local dealer as soon as possible. Also, keep the box and packing materials in case you need to ship the unit in the future.

Your AP11B package should contain the following items:

- AP11B x1
- Stand x1
- Quick Start Guide x1
- CD title including User's Manual and Quick Start Guide x1
- DC 12V/500mA Power Adaptor x1

2. Unit Description

2.1 Front View

<2>

<1>

<1> LEDs
Indicate the power and traffic utilization status.

<2> Antenna
External dipole antenna.

2.1.1 LEDs Display

<1> <2> <3> <4>

*** Under this condition, the AP11B will not work properly.**

<1> Ethernet Link Indicator
- On: link is ready
- Off: link is not ready*
- Blinking: traffic through this Ethernet port

<2> Encryption Indicator
- On: encryption function enabled
- Off: encryption function disabled

<3> Power Indicator
- On: power is attached.
- Off: power is not attached.

<4> Wireless Status Indicators

There are three indicators showing the status of wireless network.

- : traffic utilization is high
- : traffic utilization is fair
- : traffic utilization is low

2.2 Rear View

<1>

<1> Mounting Holes

The mounting distance between the mounting holes is 5.5cm.

(For information on how to use the mounting holes, refer to *Wall- or Ceiling-mounted Installation.*)

2.3 Side View

<1> <2> <3>

Figure 3: Side Panel

<1> Power Jack
Power jack with input voltage at 12VDC/500mA.

<2> Reset Button
Press and hold the button for a duration of
> 5 seconds - reload the factory default settings.
< 5 seconds - reset the system.

<3> RJ-45 Ethernet Jack
RJ-45 connector allows your AP11B connected to a network environment.

3. Installation/Configuration

3.1 Default Parameters

Default Parameters	
Password	admin
IP address	192.168.1.254
Subnet mask	255.255.255.0
SSID	AP11B
Channel	7
Encryption	Off
DHCP client	Disable

3.2 System requirements

You need the followings to configure respective network settings:

- Computers with the following operating systems and with an installed Ethernet adapter
  - Microsoft Windows
  - Linux
  - MAC OS
- Any browser compatible with Internet Explorer 5.0 and later, or Netscape Communicator 5.0 and later

3.3 Installing Your AP11B

Positioning

The AP11B can be free-standing, wall- or ceiling-mounted. (Refer to*3.3.1 Free-standing Installation, 3.3.2 Wall- or Ceiling-mounted Installation* for details.) Before making the AP11B workable, please note that the AP11B should be placed in a location with the followings:

- **Easy accessibility:** you can conveniently connect the AP11B to the xDSL/Cable Modem through the Ethernet port.
- **Easy LEDs observation**: you may monitor the real-time networking status and take instant measures as problems arise.
- **Maximum wireless coverage**: to achieve the maximal coverage, the AP11B should be placed at a high level in position without obstacles and defiladed space. No matter how you install the AP11B--- in a wall-mounted or free-standing fashion, remember the antenna should always point*vertically upward*.

Connecting Cables

1. Plug the DC end of the power adapter into the connector of the AP11B, and the AC end to the wall outlet later.
2. For wired connection, connect the AP11B to the LAN port.

Power Up

When the DC end of the power adapter is connected the AP11B, plug the AC end of the power adapter to the wall outlet can power up the system; and, the system will perform POST (Power-On-Self-Test) to diagnose the system.

3.3.1 Free-standing Installation

Step 1 Take out the AP11B and its stand.

Step 2 Locate the mounting holes on the rear panel of the AP11B and align them to the hooks of the stand.

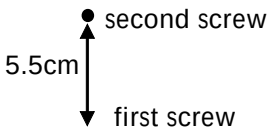
Step 3 The AP11B is hooked to the stand.

The free-standing installation is completed.

3.3.2 Wall- or Ceiling-mounted Installation

Step 1 Take out the AP11B and screws.

Step 2 The mounting distance between screws is 5.5cm.



Step 3 Hammer the screws partly into the wall (or the ceiling) and then use the screwdriver to screw them half into the wall.*

* An electric drill may also do the job.

Step 4 Align the mounting holes with the screws and then push the AP11B downward* to secure the access point in place.

* Push the AP11B to either left or right for ceiling-mounted installation.

Step 5 The wall-mounted installation is completed.

For maximum wireless coverage:
wall-mounted AP11B - antenna vertically upward
free-standing AP11B - antenna vertically upward
ceiling-mounted AP11B - antenna vertically downward

3.4 Web-based Configuration

The AP11B provides you a convenient tool to customize the network settings. Whenever you want to configure the respective settings, open your web browser (eg. Internet Explorer or Netscape Communicator), then type the default IP address in the Address bar and press [Enter].

Enter default
Password "admin"

3.4.2 Customized Configuration

If you want to customize your AP11B for some specific purposes, you may perform the Customized Configuration here.

Click Customized Configuration, and the main window appears as below.

The Menu Bar

Main Window of Customized Configuration

The Menu Bar

There is a menu bar in the top of the Customized Configuration window, where contains two options to exit the configuration window: **HOME** and **Logout**, as described in *p. 11*); and three options for advanced configuration: **System**, **LAN**, **Wireless**, allowing you to configure these respective settings and view the system status.

The Menu Bar

System This page includes all the basic configuration tools such as options to set up password, upgrade system firmware, view system status and restart system.

Password Setting

The default password of your access point is " ". This option allows you to use personal password to replace the old one.

*Once you have changed the settings in each option, press **Apply** to save the changes, or **Cancle** to abandon. Press **Help** can bring up the help window.*

Firmware Upgrade

Once you obtained a new version of firmware (eg. download from the MSI website), you can update the firmware of your AP11B.

How to upgrade the firmware:

1. Obtain the latest version of the firmware and save it to the designated location of your system.
2. Browse to the designated location and open the file.

3. Make sure the file is correct. Press to continue.

make sure the file is correct

press here

4. Click to continue with upgrading.

5. To check if the upgrading process is successfully completed, click to view thethe firmware version.

Select this

Restart

You may restart your AP11B manually without unplugging the power cable. Please NOTE that selecting "Restart" will not lose your current configuration.

System Status

This option contains detail information of your AP11B, including general information and respecitve network settings.

LAN LAN is short for Local Area Network. This is considered your internal network. In the LAN Setting page, you can configure the IP setting.

DHCP Client - default Disable
When set to [Enable], your access point can obtain an IP address automatically from the DHCP server.
Please note that once you enable DHCP Client, you might not be able to configure your AP11B in web browser unless you know what IP address your access point is assigned.

IP Address - default 192.168.1.254
The IP address of the LAN interface.

Subnet Mask - default 255.255.255.0
The subnet mask of the LAN interface.

Default Gateway - optional
The IP address of the router/gateway on your network.

Wireless In the section, you can configure all wireless related settings for your AP11B.

SSID & Channel

This option is used to set the SSID and channel for your AP11B.

3-1

1

2

How to change the SSID and Channel:

1. Enter your new SSID and Channel selection.
2. Press to reset your SSID and Channel.
3. To check if the system has reset the SSID and Channel, first click and then select to view the Wireless Settings.

3-2

Radio Settings

This option allows you to configure the operation parameters of the AP11B Radio Settings*.

** These settings are for advanced users or MIS staff only. If you do not know how to set these parameters, it is recommended to use the default value.*

Encryption

This option allows you to configure the settings of data encryption. WEP key must be set before the data encryption is enforced.

Associated Client List

This option is to display information of stations that are currently associating to your access point.

Association Control

This option allows you to control the association privilege of client stations. Once you add client stations to the list, only the client stations in the Association Control List have entry permissions to the access point.

4. Technical Support

Visit the MSI website for FAQ, technical guide and firmware updates, and other information:

Contact our technical staff at:

5. Specifications

Data Rates	11, 5.5, 2, 1 Mbps and auto-fallback
Standard	IEEE 802.11b, IEEE802.3u 10/100 Base-Tx
Range	150-500 feet (indoor), 1000-1600 feet (outdoor)
Frequency	2.4 GHz
Wireless Radio Type	DSSS (Direct Sequence Spread Spectrum)
Modulation Type	CCK, BPSK, and QPSK
WEP Encryption	64/128-bit
Antenna	One external dipole and one internal patch
Protocols Support	TCP/IP, DHCP Client, HTTP
Wired Interface	One Ethernet IEEE 802.3u 10/100 Base-Tx, RJ-45 with Auto MDI/MDI-X
User Selectable Settings	Network Mode, SSID, Channel, Tx Rate, RTS/ CTS Threshold, Fragmentation Threshold, WEP, Mac Filtering, Firmware Upgrade
LED Indicators	Power, Wireless Traffic Status, WEP, Ethernet Link
Output Power	Up to +18dBm
Sensitivity	-82dBm@11Mbps -85dBm@5.5Mbps -87dBm@2Mbps -88dBm@1Mbps
Power Consumption	Max. 3.6 watts (continuous transmit mode)
Power Adapter	110~120AC (USA, Canada) 220~240AC (Europe) DC output: 12V DC Output current: 500mA
Dimensions	124.5 x 88.5 x 24.5 mm
Weight	233g (with stand)/133g (without stand)

Operating Environment	Operating environment: 0~50°C (32~122°F) Storage environment: -30~70°C (-22~158°F) Humidity: Up to 40°C (104°F) with 85% non-condensing
Input Voltage	12VDC
Package Contents	
Main unit	One AP11B Wireless Access Point
Documentations	Quick Start Guide; User's Manual and Quick Start Guide on CD-ROM
Peripherals & Accessories	Power Adapter & Stand
Certifications	
United States	FCC Part 15 Class B
Europe	CE

6. Glossary

Accept Broadcast DDIS

If this option is checked, stations that are broadcasting to search for an AP (stations that set desired SSID to 0 length) will be associated. Otherwise, only stations that specify the SSID in the requests will be associated.

Access Point

A hardware device that acts as a communication hub for users of a wireless device to connect to a wired LAN. Access points are important for providing heightened wireless security and for extending the physical range of service a wireless user has access to.

Association

A unique number that identifies a particular association between an access point and a wireless Station. An association identifies the service used to establish access point and station mapping. An Association is required before any information can be passed between the Station and other nodes via the AP.

Authentication Type

The type of access an individual is given to a network, such as username and password.

Beacon Period

The beacon period is the amount of time between access point beacons in Kilomicroseconds. One Kusec equals 1, 024 microseconds. The Data Beacon Rate, always a multiple of the beacon period, determines how often the beacon contains a DTIM.

Channel

A communications path between two computers or devices.

Client Privileges

Your home network Gateway can block certain services to computers on your network, using the Client Privileges page in Setup. For example, you can block Internet access to your child's computer during times when you are not able to supervise his/her computer use.

Default Gateway

The primary node on a network that serves as an entrance to another network. In homes, the gateway is the ISP that connects the user to the Internet.

DHCP Client

DHCP, short for *Dynamic Host Configuration Protocol* , is a protocol for assigning dynamic IP addresses to devices on a network. With dynamic addressing, a device can have a different IP address every time it connects to the network. In some systems, the device's IP address can even change while it is still connected. DHCP also supports a mix of static and dynamic IP addresses.

DNS Server Address

DNS stands for Domain Name System, which allows Internet host computers to have a domain name (such as msi.com) and one or more IP addresses (such as 192.34.45.8). A DNS server keeps a database of host computers and their respective domain names and IP addresses, so that when a domain name is requested (as in typing "MSI.com" into your Internet browser), the user is sent to the proper IP address. The DNS server address used by the computers on your home network is the location of the DNS server your ISP has assigned.

DSL Modem

DSL stands for Digital Subscriber Line. A DSL modem uses your existing phone lines to transmit data at high

speeds.

DTIM Period

Short for *Delivery Traffic Indication Message*, it's a message transmitted from an access point. The message is comprised of two parts; DTIM Count and the DTIM Period and indicates that broadcast and multicast frames, buffered at the access point, will be delivered in the near future.

Ethernet

A standard for computer networks. Ethernet networks are connected by special cables and hubs, and move data around at up to 10 million bits per second (Mbps).

IP Address

IP stands for *Internet Protocol*. An identifier for a computer or device on a TCP/IP network. Networks using the TCP/IP protocol route messages based on the IP address of the destination. The format of an IP address is a 32-bit numeric address written as four numbers separated by periods. Each number can be zero to 255. For example, 1.160.10.240 could be an IP address.

ISP Gateway Address

The ISP Gateway Address is an IP address for the Internet router located at the ISP's office. This address is required only when using a cable or DSL modem. See ISP for definition.

ISP

Internet Service Provider. An ISP is a business that provides connectivity to the Internet for individuals and other businesses or organizations.

LAN

Local Area Network. A LAN is a group of computers

and devices connected together in a relatively small area (such as a house or an office). Your home network is considered a LAN.

MAC Address

MAC stands for Media Access Control. A MAC address is the hardware address of a device connected to a network.

NAT

Network Address Translation. This process allows all of the computers on your home network to use one IP address. Using the NAT capability of the HomeConnect home network gateway, you can access the Internet from any computer on your home network without having to purchase more IP addresses from your ISP.

Open System

Any station is allowed to authenticate (and then attempt to associate). No verification of the identity of the station is required.

PPPoE

Point-to-Point Protocol over Ethernet. Point-to-Point Protocol is a method of secure data transmission originally created for dial-up connections; PPPoE is for Ethernet connections.

Radio Preamble

The radio preamble (sometimes called a header) is a section of data at the head of a packet that contains information that the access point and client devices need when sending and receiving packets.

Shared Key

A station that attempts to associate with the AP is required to have a copy of a shared WEP key with the

AP. The key is used to encrypt and decrypt a "challenge text" during the authentication.

SPI

Stateful Packet Inspection. SPI is the type of corporate-grade Internet security provided by your Home-Connect home network gateway. Using SPI, the gateway acts as a "firewall," protecting your network from computer hackers.

SSID

Short for*Service Set Identifier*, a 32-character unique identifier attached to the header of packets sent over a LAN that acts as a password when a mobile device tries to connect to the access point. The SSID differentiates one LAN from another; so all access points and all devices attempting to connect to a specific LAN must use the same SSID.

Subnet Mask

A subnet mask, which may be a part of the TCP/IP information provided by your ISP, is a set of four numbers configured like an IP address. It is used to create IP address numbers used only within a particular network (as opposed to valid IP address numbers recognized by the Internet, which must assigned by InterNIC).

TCP/IP

Transmission Control Protocol/Internet Protocol. This is the standard protocol for data transmission over the Internet.

WAN

Wide Area Network. A network that connects computers located in geographically separate areas, (i.e., different buildings, cities, countries). The Internet is a wide area network.

WEP

WEP stands for Wired Equivalent Privacy. It is based on the IEEE 802.11 standard and uses the RC4 encryption algorithm. Enabling WEP allows you to increase security by encrypting data being transferred over your wireless network.

WEP Key

A password needed to allow WEP access.

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